

What is claimed is:

- 1 1. An arc tube comprising:
 - 2 a glass tube having a turning part, and being wound around
 - 3 an axis from the turning part to at least one end of the glass
 - 4 tube, so as to form a spiral part; and
 - 5 a phosphor coating provided on an inner surface of the
 - 6 glass tube, wherein
 - 7 at any cross section of the glass tube of the spiral part,
 - 8 the phosphor coating is thicker in a first area than in a second
 - 9 area, the first and second areas facing each other in a direction
 - 10 that is parallel to the axis and that passes through a center
 - 11 of the cross section, the first area being nearer the end of
 - 12 the glass tube than the second area is.
- 1 2. The arc tube of Claim 1, wherein
 - 2 the phosphor coating provided on the first area increases
 - 3 in thickness from the turning part towards the glass-tube end.
- 1 3. The arc tube of Claim 1, wherein
 - 2 the glass tube is wound around the axis from the turning
 - 3 part to both ends of the glass tube.
- 1 4. The arc tube of Claim 1, wherein
 - 2 a mass per unit area of the phosphor coating provided
 - 3 on the second area is in a range of 2 mg/cm² to 12 mg/cm² inclusive.

1 5. The arc tube of Claim 1, wherein
2 a mass per unit area of the phosphor coating provided on
3 the first area is in a range of 5 mg/cm² to 30 mg/cm² inclusive.

1 6. The arc tube of Claim 1, wherein
2 the phosphor coating is a three band phosphor coating.

1 7. A discharge lamp comprising the arc tube of Claim 1.

1 8. A method of producing an arc tube including: a glass
2 tube having a turning part, and being wound around an axis from
3 the turning part to at least one end of the glass tube, so as
4 to form a spiral part; and a phosphor coating provided on an
5 inner surface of the glass tube, the production method
6 comprising:
7 a step of forming the turning part and the spiral part,
8 by bending a glass tube;
9 a step of injecting a phosphor-including suspension into
10 the glass tube bent at the forming step;
11 a step of allowing the suspension to flow from inside
12 the glass tube after the injection step, by keeping the glass
13 tube in an upright state, with the turning part positioned on
14 top; and
15 a step of drying the glass tube after the flow-allowing
16 step, in the upright state.

1 9. The production method of Claim 8, wherein
2 the glass tube is wound around the axis from the turning
3 part to both ends of the glass tube.

1 10. The production method of Claim 8, wherein
2 the suspension is injected into the glass tube with the
3 turning part positioned on top.

1 11. The production method of Claim 10, wherein
2 the injection of the suspension continues until the
3 injected suspension exceeds the turning part.

1 12. The production method of Claim 8, wherein
2 a viscosity of the suspension is in a range of 4.5 cP
3 to 8.0 cP inclusive.

1 13. The production method of Claim 8, wherein
2 an inner diameter of the glass tube is in a range of 5
3 mm to 9 mm inclusive.